Name: _____ **Engine #** _____ /20

4-stroke Internal Combustion Engine

Job – Valves

Preparation

In order to complete this job it will be necessary to remove the following engine components before proceeding:

- Cylinder head
- Air cleaner
- Gas tank
- Tappet cover

Disassembly

1. Rotate crankshaft to position it such that both valves are seated.
2. Use a valve spring compressor to release the valve spring retainer.
3. Lift the valve out of the cylinder block and if needed clean the valve with a wire brush.
4. Remove the spring and the keeper. Be sure to keep the spring, the keeper and the valve together as a set.
5. Repeat the procedure to remove the other valve.

SHOW THE <u>REMOVED VALVES</u> TO YOUR INSTRUCTOR AND HAVE THEM INITIAL THE BOX BELOW!!

Instructor's Initials

/2

Take and record the following measurements:

1. Valve margin (to the nearest 1/64 inch using a steel scale)

   a. Intake measured _____ Recommended _____ /1

   b. Exhaust measured _____ Recommended _____ /1

2. Valve seat (to the nearest 1/64 inch using a steel scale)

   a. Intake measured _____ Recommended _____ /1

   b. Exhaust measured _____ Recommended _____ /1

Reassembly

1. Smear a thin film of oil on the valve stems,
2. Assemble the spring and retainer in the valve spring compressor as demonstrated.
3. Compress the spring in the compressor taking care to control possible escape by placing your hand over the spring.
4. Insert the compressed spring and retainer into the block.
5. Feed the valve stem into the block and through the large hole in the retainer.
6. Move the compressor in such a way as to hook the small hole of the retainer on the valve stem.
7. Release the valve spring compressor.
8. Place a finger on the spring to keep it in place while quickly pulling out the compressor.
9. Repeat the procedure for the other valve.

SHOW THE <u>REINSTALLED VALVES</u> TO YOUR INSTRUCTOR AND HAVE THEM INITIAL THE BOX BELOW!!

Instructor's Initials

/2

With the valves reinstalled, record the following measurements

1. Tappet clearance

   a. Intake measured _____ Recommended _____ /1

   b. Exhaust measured _____ Recommended _____ /1

2. Valve lift (to the nearest 1/64 inch using a steel scale)

   a. Intake measured _____ /1

   b. Exhaust measured _____ /1

Questions

1. What dictates amount of valve lift?

   /1

2. What function do the valve springs server?

   /1

3. You hopefully noticed that the intake valve was quite a bit larger than the exhaust valve, what is the reason for this?

   /1

4. In the space below, draw the 'valve train' of your engine. Label all of its components as well as all of the parts of the valve itself. (*your work will be marked for both quality and completeness*)

/5

Valve Train